

In the Drawings:

Attached hereto is an amended drawing labeled "New Sheet" in compliance with 37 C.F.R. § 1.21(d).

REMARKS/ARGUMENTS

This is meant to be a complete response to the Office Action mailed July 18, 2006. In the Office Action, the Examiner objected to the drawings filed on May 3, 2006, because the "New Sheet" was not based on the drawings filed April 14, 2006. In addition, the Examiner rejected claims 46, 50, and 53 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Moreover, the Examiner rejected claims 46-60 under 35 U.S.C. § 102(b) for being anticipated by Mizumoto et al (U.S. Patent Number 5,662,987) or under 35 U.S.C. § 103(a) for being obvious over the teachings of Mizumoto. The Office Action dated July 18, 2006, and Mizumoto have been reviewed. The drawing (Fig 3) has been amended by properly being identified as "New Sheet." Claims 46, 49, 50, and 53 have been amended. Claim 61, and claim 62 have been added. For the reasons set forth below, Applicants believe the claims pending in the application are now in condition for allowance.

Objection to Drawings

In the Office Action dated July, 28, 2006, the Examiner objected to the drawings filed on May 3, 2006 because the "New Sheet" was not based on the drawings filed April 14, 2006. Applicants appreciate the

is being filled again with this response. The new drawing, representing Fig. 3, describes a buried form of the blind via of claims 46-60. Fig. 3 is essential to better understand Applicants' inventive concept in the above referenced application for it describes a buried blind via. Applicants are requesting the new drawing, attached hereto, be added to the current drawings.

Rejection under 35 U.S.C. § 112 of claims 46, 50, and 53

The Examiner rejected claims 46, 50, and 53 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, the examiner pointed out that claims 46, 50, and 53 are vague and indefinite as to whether the phrase "a blind via extending from said first surface" is referring to a through-hole via or a buried via. The Examiner further noted that claims 50 and 53 are indefinite for using the phrase "a first conductive layer extending over substantially all of the first surface" and for the term "end portion." Further more, claim 53 is structurally indefinite due to the phrase "the conductive material plugging the blind via... has no opening extending...." The Examiner also indicated that claims 49 and 50 are

indefinite due to the phrases "greater than approximately" and "exceeding approximately," respectively.

Fig. 3 has been added to describe the circuit board of claims 46, 50, and 53 with a buried blind via. In addition, claims 61 and 62 have been added to better describe applicants "blind via." More specifically, claim 61 recites a blind via that is a "buried" blind via; whereas, claim 62 recites a blind via that is a "through-hole" blind via. Therefore, Fig. 3, claim 61, and claim 62 clarifies Applicants' blind via recited in claims 46, 50, and 53.

Claims 49, 50, and 53 have been amended to better clarify the Applicant's inventive concept. It should be noted that claims 49, 50, and 53 have not been amended for any purpose related to patentability. More specifically, claims 50 and 53 have been amended to describe "a first conductive layer extending over the first surface and the walls of the blind via," and "end portion" has been removed so as to eliminate any confusion. Likewise, claims 49 and 50 have been amended to remove the term "approximately," thus, removing any ambiguity. Finally, claim 53 has been further amended by removing "the conductive material plugging the blind via such that the blind via has no opening extending from the first surface," and clarifying that the "conductive material positioned within and fills the blind via."

In light of the foregoing, it is Applicant's belief that claims 46, 49, 50, and 53 are patentable under 35 U.S.C. § 112, second paragraph. Therefore, reconsideration and withdrawal of the rejection of claims 46, 49, 50, and 53 is respectfully requested.

Rejection under 35 U.S.C. § 102(b) of claims 46-60

The Examiner rejected claims 46-60 under 35 U.S.C. §102(b) for being anticipated by Mizumoto. According to the Examiner, Mizumoto teaches:

"...multilayer printed wiring board... Each layer comprised of an insulating layer with a via hole formed in the thickness direction of the insulating layer. A first conductive layer formed from the top surface of the insulating layer and plating the via hole surface and closed the bottom side (here refer to 2nd side), the examiner is taking the position that this is a blind via hole (Fig. 19).... Electrically conductive material (530) is filled into the blind via, followed by plating a second conductive layer (560). The second conductive layer is plated over the electrically conductive material."

Claim 46 has been amended to better clarify Applicant's inventive concept. It should be noted that claim 46 has not been amended for any purpose related to patentability. More specifically, claim 46 has been amended to recite a circuit board with a first surface and a blind via, and "a cured mass of a flowable conductive material extending over the first surface and filling said blind via." Similarly, and as shown in Fig. 1E, claims 50 and 53 teach a circuit

board with "a second conductive layer extending over the first surface and the walls of the blind via" and another layer of conductive material that covers the first conductive surface and the material filling the blind via.

Conversely, Mizumoto teaches, as shown in Fig. 13, the plated layer 390 which extends "across the respective filler material 340 and the upper most portion of plated layers." (Col. 4, lines 44-47).

Mizumoto does not teach or suggest extending over the first surface, but rather, Mizumoto teaches extending across the upper most portion of the plated layers. Therefore, Mizumoto does not teach or suggest the circuit board recited in claims 46, 50, and 53.

It should be noted that claims 47-49 depend from independent claim 46; claims 51 and 52 depend from independent claim 50; and claims 54-60 depend from independent claim 53. Therefore, claims 47-49, 51, 52, and 54-60 contain each and every limitation of their respective independent claim. Claims 46, 50, and 53 are all discussed above. Thus, no further comments concerning claims 47-49, 51, 52, and 54-60 are deemed necessary herein to be fully responsive to the Office Action dated July 18, 2006.

In light of the foregoing, it is Applicant's belief that claims 46-60 are patentable under 35 U.S.C. § 102(b) over the teachings of

Mizumoto. Therefore, reconsideration and withdrawal of the rejection of the claims 46-60 is respectfully requested.

Rejection under 35 U.S.C. § 103(a) of claims 46-60

The Examiner rejected claims 46-60 under 35 U.S.C. § 103(a) for being obvious over the teachings of Mizumoto. Applicant respectfully traverses the rejection based on the reasons herein below.

As the Examiner is aware, to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claimed limitations. The teaching or suggestions to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F. 2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As shown in Fig. 1E, claims 46, 50, and 53 recite a circuit board with conductive material that extends "over the surface and the blind via." On the other hand, Mizumoto teaches conductive material extending "across the respective filler material 340 and the upper

most portion of plated layers.” (Col. 4, lines 44-47, Fig. 12, and Fig.13). Therefore, Mizumoto does not teach or suggest the circuit board recited in claims 50 and 53. Thus, a prima facie case of obviousness has not been provided.

In light of the foregoing, it is Applicant’s belief that claims 46, 50, and 53 are patentable under 35 U.S.C. § 103(a) over the teachings of Mizumoto. Therefore, reconsideration and withdrawal of the rejection of the claims 46, 50, 53 is respectfully requested.

It should be noted that claims 47-49 depend from independent claim 46; claims 51 and 52 depend from independent claim 50; and claims 54-60 depend from independent claim 53. Therefore, claims 47-49, 51, 52, and 54-60 contain each and every limitation of their respective independent claim. Claims 46, 50, and 53 are all discussed above. Thus, no further comments concerning claims 47-49, 51, 52, and 54-60 are deemed necessary herein to be fully responsive to the Office Action dated July 18, 2006.

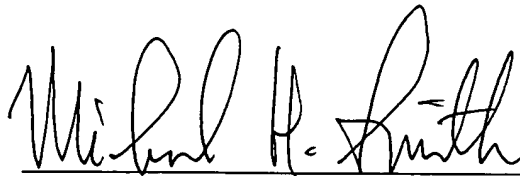
In light of the foregoing, it is Applicant’s belief that a prima facie case of obviousness has not been provided. Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 46-60.

CONCLUSION

The foregoing is meant to be a complete response to the Office Action mailed July 18, 2006. It is respectfully submitted that this application, as now amended, is in condition for allowance for the reasons stated above. Therefore, it is requested that the Examiner reconsider each and every rejection as applicable to the claims now pending in the application and pass such claims to issue.

This amendment is intended to be a complete response to the Office Action dated July 18, 2006. In the event that any outstanding issues remain that would delay the allowance of this application, the examiner is urged to contact the undersigned to telephonically discuss such outstanding issues.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael H. Smith", written over a horizontal line.

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